

Amendments to the Specification:

Please replace paragraphs of the specification beginning on page 3, line 19 and ending on page 5, line 18 with the following paragraphs:

- To achieve the above objects, in accordance with one aspect of the present invention, there is provided a control device for controlling a network device connected to a network. The control device comprises a communication interface adapted to receive description information of the network device from the network device via the network and a controller adapted to automatically generate an object for the network device using the description information after the description information is received from the network device. The object generated by the controller is adapted to generate a control panel for controlling the network device.
- To achieve the above object, there is also provided a method in a control device that controls a network device connected to a network. The method comprises the steps of receiving description information of the network device from the network device via the network, and automatically generating an object for the network device using the description information after the description information is received from the network device, wherein the object is adapted to generate a control panel for controlling the network device.
- In accordance with another aspect of the present invention, there is provided a control device for controlling a network device connected to a network. The control device, in this case, comprises a communication interface adapted to receive description information of the network device from the network device via the network and a controller adapted to automatically generate an object for the network device using the description information after the description information is received from the network device. The object generated by

the controller is adapted to generate a control panel for controlling the network device, to start a first process that displays the control panel if a user selects an icon representing the network device and to start a second process that transmits a message relating to a graphical element on the control panel to the network device if the user operates the graphical element.

-- In accordance with another aspect of the invention, a method performed in a control device that controls a network device connected to a network is also provided. The method comprises the steps of receiving description information of the network device from the network device via the network and automatically generating an object for the network device using the description information after the description information is received from the network device. The object is adapted to generate a control panel for controlling the network device, to start a first process that displays the control panel if a user selects an icon representing the network device and to start a second process that transmits a message relating to a graphical element on the control panel to the network device if the user operates the graphical element. --.

Please amend paragraph beginning on page 11, line 15 and ending on page 11, line 17 as follows:

-- FIG. 59 is a flowchart showing the operation of a multimedia device for the [[a]] power on/off manipulation according to the fifth embodiment of the present invention; --.

Please amend paragraph beginning on page 15, line 24 and ending on page 16, line 2 as follows:

-- Regarding the connection configurations, the mixed systems shown in FIGS. 2(a) to 2(c), such as GPIB (IEEE 488), are known, or the mixed systems shown in FIGS. 2(b) and 2(c) are adopted for Ethernet as well. Regarding the communication systems as well, it is possible to select various systems or combinations, such as a system employing optical cables and ISDN. --.

Please amend paragraph beginning on page 32, line 14 and ending on page 32, line 19 as follows:

-- Subsequently, the user can use the digital VTR 203 via the digital VTR delegate object 220 provided in the multimedia controller 1 by manipulating the digital VTR 203 on the basis of the manipulation picture displayed on the basis of the digital VTR control panel object 221 of the multimedia controller 1. --.

Please amend paragraph beginning on page 35, line 16 and ending on page 36, line 6 as follows:

-- The play button object 290 is generated from the button class and the information described in the control panel object description part 247 of the digital VTR delegate object description file 210. A pointer-to-class-method-table storage part 613 stores pointers which point to a button class class method table 625. The button class class method table 625 includes button initializing means 626 for initializing the internal variables of a button object when an object of the button class is to be generated, button graphic displaying means 627 for graphically displaying the play button object 290, and click response means 628. If the user specifies a desired position at which the play button object 290 is to be graphically displayed,

by means of the cursor 230 of the pointing device such as a mouse and executes a click operation, the click response means 628 responds to the click operation to ~~indicates~~ indicate that the play button object 290 has been clicked, as by temporarily changing the state of a button display, and sends a message to another object. --.

Please amend paragraphs beginning on page 42, line 22 and ending on page 43, line 12 as follows:

-- FIG. 25 is a view showing the structure of the digital VTR data input delegate object as well as the relationship between the structure and object description information. The digital VTR data input delegate object 222 shown in FIG. 25 includes a pointer-to-class-method-table storage part 668 which ~~store~~ stores pointers to a data input delegate class class method table 679. The data input delegate class class method table 679 includes data input delegate object initializing means 680, link information updating means 681 and acceptable file type replying means 678.

-- The digital VTR data input delegate object 222 also includes message communicating means 669, processing retrieving means 670 and a method part 671. An internal data part 674 includes an object ID 675, corresponding data input object ID 676 indicative of the ID of a corresponding data input object, an acceptable file type 677 indicative of the file types of data which can be inputted, and link information 1006 indicative of a link to a data output object. -

Please amend paragraph beginning on page 45, line 27 and ending on page 46, line 13 as follows:

-- When the digital VTR data input delegate object 222 and the digital VTR data output delegate object 223 of the digital VTR 203 ~~is~~ are generated in the multimedia controller 1, the digital VTR data input delegate object 222 and the digital VTR data output delegate object 223 function as if they were the digital VTR data input object 208 and digital VTR data output object 209. For example, if the file of another multimedia device is to be copied to the digital VTR 203, the system director object 205 ~~inquires~~ makes an inquiry as to the types of files which can be inputted ~~of~~ to the digital VTR data input delegate object 222. In response to the inquiry of the system director object 205, the acceptable file type replying means 678 of the digital VTR data input delegate object 222 replies as to the file types which can be received by the digital VTR 203. --.

Please amend paragraph beginning on page 48, line 6 and ending on page 48, line 12 as follows:

-- In addition, some of the components of a control panel sent from a multimedia device to the multimedia controller can be replaced with components having identical definitions and provided in the multimedia controller in advance, to satisfy a user's taste. Accordingly, it is possible to unify various user interfaces which differ among manufacturers. --.

Please amend paragraph beginning on page 48, line 19 and ending on page 50, line 14 as follows:

-- The panel view setting menu object 285 shown in FIG. 30 includes a pointer-to-class-method-table storage part 1428 which stores pointers to a menu class class method table 1430. The menu class class method table 1430 includes menu initializing means for initializing a

menu object, menu graphic displaying means 1432 for graphically displaying a menu, and menu selection response means 1433 for displaying a response operation when a selection from the menu is performed. The panel view setting menu object 285 also includes message communicating means 1429, processing retrieving means 1434, a method part 1435 and an internal data part 1436. The internal data part 1436 includes an object ID 1437, menu state data 1438 and a graphical-display parameter 1439. The internal data part 1436 is initialized in accordance with the digital VTR delegate object description file 210, and the panel view setting menu description part of the digital VTR control panel object description part 211 of the digital VTR delegate object description file 210 includes object recognition information 1440, first object graphical-display information 1444 for displaying the title of a panel view setting menu, second object graphical-display information 1448 for displaying a first menu item of the panel view setting menu, and third object graphical-display information 1452 for displaying a second menu item of the panel view setting menu. The object recognition information 1440 includes a class name 1441 (in this example, a menu class), an object 1442 (in this example, ID=2) and an object ID 1443 of an object to which the object belongs (in this example, a digital VTR control panel of ID=1). The first object graphical-display information 1444 includes graphical-display position and size information 1445, shape and color information 1446 and an object image 1447, and represents a menu title 1462. The second object graphical-display information 1448 includes graphical-display position and size information 1449, shape and color information 1450 and an object image 1451, and represents a first menu item 1463. The third object graphical-display information 1452 includes graphical-display position and size information 1453, shape and color information 1454 and an object image 1455, and represents a second menu item 1464. First object link information

1456 describes a message to be issued when the first menu item 1463 is selected as well as a receiver to which the message is to be sent. The link target object ID 1457 is the ID of the system director object 205, and a sending message 1458 represents the message "Create object with file "Default"". Second object link information 1459 describes a message to be issued when the second menu item 1464 is selected as well as a receiver to which the message is to be sent. ~~An~~ A link target object ID 1460 represents the ID of the system director object 205, and a sending message 1461 represents the message "Create object with file "Custom1"". --.

Please amend paragraph beginning on page 52, line 2 and ending on page 52, line 14 as follows:

— FIGS. 34(a) and 34(b) are views showing different examples of the arrangement of manipulating buttons. In general, the arrangements of manipulating buttons of electrical ~~equipments~~ equipment as well as multimedia devices differ among manufacturers, and may even differ among products manufactured by a single manufacturer. This fact confuses users. If a user who is familiarized with the manipulation of a particular device purchases a new device, the user needs to learn the manipulation of the new device. In accordance with the present invention, it is possible to easily change the arrangement of manipulating buttons by modifying a delegate object description file, and users can be allowed to select a desired one from among a plurality of arrangements. --.

Please amend paragraph beginning on page 53, line 1 and ending on page 53, line 9 as follows:

-- An increase in the functional level of multimedia devices is another cause ~~of the~~ for confusion of users. Specifically, if manipulating members for functions which are normally not used by ordinary users or which can only be used by users having technical knowledge are displayed on a control panel, the ordinary users may become unable to easily use multimedia devices. To solve such a problem, the present invention also makes it possible to display only the manipulating members needed by a user. --.

Please amend paragraph beginning on page 53, line 23 and ending on page 54, line 15 as follows:

-- It is possible to perform switching between the control panel display picture 231 for manipulating only the minimum required functions and the control panel display picture 276 for manipulating functions which ~~contains~~ contains additional functions, by means of the control mode switching object 294. Specifically, if the user selects the advanced button 268 shown in FIG. 35 by using the pointing device, the system director object 205 reads a digital VTR control panel delegate object description file which describes the control panel display picture 276 for manipulating the functions which ~~contains~~ contain the additional functions, to generate a control panel object for manipulating the functions which ~~contains~~ contain the additional functions. If no additional functions are needed, the user similarly selects the default button 267 shown in FIG. 35 by using the pointing device, so that the system director object 205 reads a digital VTR control panel delegate object description file which describes the control panel display picture 231 for manipulating the minimum required functions, to regenerate a control panel object for manipulating the minimum required functions. --.

Please amend paragraphs beginning on page 62, line 22 and ending on page 63, line 18 as follows:

-- In Step S1, the data input/output managing means inquires as to an acceptable file type of the output delegate object of the device A (if there are a plurality of acceptable file types, a list of the acceptable file types is replied).

-- In Step S2, the data input/output managing means inquires as to an acceptable file type of the input delegate object of the device B. If there are a plurality of acceptable file types (acceptable formats) for the device B, the input delegate object of the device B sends information indicative of the priority of each of the file types to the data input/output managing means. Incidentally, the priority indicates the order of file types which can be suitably inputted into the device B, the order being specified by the manufacturer of the device B or the user. A file type of highest priority is herein referred to as the "highest-priority file type for the device B". Then, in Step S3, an acceptable file type (or an acceptable file type list) for the device A is searched for in accordance with the priority of the device B. Specifically, a highest-priority file type for the device B is searched for from among the acceptable file types for the device A which have been read in Step S1. The file type which has been obtained through this processing is hereinafter referred to as an optimally acceptable file type for the device A and the device B. --.

Please amend paragraphs beginning on page 66, lines 9 and ending on page 66, line 28 as follows:

-- In Step S1, the data input/output managing means 343 inquires as to an acceptable file type of the digital camera output delegate object. The table shown in FIG. 51(a) is a list of a

plurality of digital camera acceptable file types according to the second embodiment. In FIG. 51(a), the acceptable filetypes are shown together with the respective data attributes. In FIG. 51(a), the data attributes Audio, Movie and Audio & Movie respectively represent audio data, moving-image data, and audio and moving-image data which are synchronized.

-- Then, in Step S2, the data input/output managing means 343 inquires as to an acceptable file type of the input delegate object of the digital VTR. The digital VTR used in the second embodiment can cope with a plurality of file types as shown in the table of FIG. 51(b), and informs the data input/output managing means 343 of each of the file types together with the corresponding priority. In the second embodiment, as shown in FIG. 51(b), a file type AM4 corresponding to the data attribute Audio & Movie is a highest-priority file type for the digital VTR. --.

Please amend paragraph beginning on page 69, line 14 and ending on page 70, line 5 as follows:

-- The digital VTR input delegate object (222 in FIG. 25) which has received the message from the system director object activates the link information updating means 681. The activated link information updating means 681 saves data indicative of the formation of the link from the digital camera to the digital VTR according to the format Movie2, in the link information 1006 of the internal data part ~~of the internal data part 674~~. The link information updating means 681 also sends a message indicative of the updated content of the link information to the digital VTR data input object (208 in FIG. 27) having a corresponding data input object ID. The digital VTR data input object (208 in FIG. 27) which has received the message activates the link information updating means (686 in FIG. 27) to save the updated

content of the link information in the link information (1030 in FIG. 27). The digital VTR input delegate object (222 in FIG. 25) grays out any object that does not relate to data input, from among all the objects which belong to the digital VTR control panel object (328 in FIG. 37), and sends a message indicative of an instruction to make the user's input impossible. --.

Please amend paragraph beginning on page 76, line 16 and ending on page 76, line 21 as follows:

-- In the third embodiment, the LD player (383 in FIG. 44) has no connection. If the LD player which is in this state is made to perform a play, the reproduced video and audio data are sent to an object for providing a video display and an audio output, which object is provided in the multimedia controller which is a default link target. --.

Please amend paragraph beginning on page 78, line 1 and ending on page 78, line 26 as follows:

-- In Step S3, the connection constructor window displaying means refers to the internal data part and sends a icon graphics data sending request message to all the objects having the respective object IDs described in the connected device object ID list stored in the internal data part. In Step S4, the process waits for the data to be sent. If graphics data are sent from all the ~~object~~ objects having the respective object IDs, the connection constructor window displaying means stores the graphics data in the internal data part, and causes the process to proceed to Step S5. In Step S5, the connection constructor window displaying means sends the data input/output managing object a message indicative of a request to send device-to-device link information which indicates that links are formed from which object ID to which

object ID as well as what data attributes the respective links have. In Step S6, if the connection constructor window displaying means receives the device-to-device link information, it is determined that the connection constructor object 390 has obtained enough information to display the connection constructor window 370 of FIG. 44. In Step S7, the connection constructor window displaying means performs the processing of graphically displaying the connection constructor window 370. Such graphical display is executed on the basis of icon display positions which are calculated so that the probability that links cross each other can be made as low as possible. --.

Please amend paragraph beginning on page 85, line 19 and ending on page 86, line 20 as follows:

-- The fourth embodiment has been made to solve the above-described problems, and is intended to disclose an improved multimedia system which includes multimedia devices and a multimedia controller for unitarily managing the multimedia devices. In the multimedia system, each of the multimedia devices includes a first interface control unit which functions to exercise control over communication with the multimedia controller, and the first interface control unit includes an interface controller for controlling communication at a physical or logical low level, and a first system controller for executing communication with a device function unit of the multimedia device and control of the first interface control unit. The multimedia controller includes a second interface control unit for controlling communication with each of the multimedia devices, and the second interface control unit includes an interface controller for controlling communication at a physical or logical low level, a device connection/disconnection signal processing means for processing a device connection signal

indicative of a connection of any of the multimedia devices detected by the interface controller or a device disconnection signal indicative of a disconnection of any of the multimedia devices detected by the interface controller, storage means for storing a state-of-connection management table which is to be referred to and updated in the device connection/disconnection signal processing means, and a second system controller for executing communication with the device function unit of the multimedia controller and control of the second interface unit. --.

Please amend paragraph beginning on page 90, line 20 and ending on page 91, line 13 as follows:

-- On the table shown in FIG. 55, numbers unique to the respective multimedia devices are stored in the column named "UNIQUE NUMBER", and are also used as physical addresses. The unique numbers ~~contains~~ contain attribute information, such as digital VTR or CD player, about the respective multimedia devices. If a plurality of multimedia devices having identical attribute information are connected to the multimedia control system, different names are assigned to the respective multimedia devices and are stored in the column "DEVICE NAME" on the state-of-connection management table shown in FIG. 55. For example, in the case of FIG. 55, since two digital VTRs are connected, Digital VTR1 and Digital VTR2 are stored as the respective device names. The column "OBJECT INFORMATION STORAGE ADDRESS" shown in FIG. 55 stores object information, such as pointers to areas in which display and manipulation objects for the respective multimedia devices are stored. The column "OBJECT INFORMATION STORAGE ADDRESS" will be described later in detail. The column "DEVICE ID" shown in FIG. 55 stores the

aforementioned device IDs. The other columns "POWER ON/OFF" and "CONFIRMATION OF CONNECTION" will also be described later. --.

Please amend paragraph beginning on page 109, line 21 and ending on page 110, line 7, as follows:

-- If it is determined in Step S163 that the event is not the device disconnection message, it is determined whether the event is the device connection message (S164). If it is determined that the event is the device connection message, it is confirmed as to whether the corresponding multimedia device is a device already stored on the state-of-connection management table (S165). If the multimedia device is an already stored device, the multimedia controller does not rewrite the state-of-connection management table. If it is determined that the multimedia device is a multimedia device which has not yet been stored on the state-of-connection management table, the multimedia controller newly registers the multimedia device on the state-of-connection management table, thereby updating the state-of-connection management table. --.

Please amend paragraphs beginning on page 112, line 8 and ending on page 113, line 21, as follows:

-- An eighth embodiment of the present invention will be described below. The construction of the eighth embodiment is shown in FIG. 74. As can be seen from FIG. 74, the eighth embodiment of the present invention is basically identical in construction to the fourth embodiment, but the timer circuit 105 provided in the multimedia controller 1 according to the fourth embodiment is not used. The eighth embodiment is characterized in that the

respective multimedia devices ~~includes~~ include line connection detecting circuits 138-10, 138-11 and 138-12 as well as cable connectors which serve as cable unlocking/cable disconnection detecting switches. The line connection detecting circuits 138-10, 138-11 and 138-12 are similar to those described previously in connection with each of the sixth and seventh embodiments of the present invention. One of the cable connectors which serve as cable unlocking/cable disconnection detecting switches is shown in FIG. 75. As shown in FIG. 75, when a line cable 112 is connected to a connector 143, the line cable 112 is locked by a lock mechanism so that accidental removal of the line cable 112 can be prevented. To remove the line cable 112, a cable unlocking/cable disconnection detecting switch 142 is pressed to release a cable lock. At this time, before the line cable 112 is removed, a cable disconnection detection signal is transmitted to a corresponding one of the line connection detecting circuits 138-10, 138-11 and 138-12 so that the line cable 112 is about to be removed.

-- The line connection detecting circuit which has received the cable disconnection detection signal transmits a device disconnection message to the multimedia device 1 similarly to the case of each of the sixth and seventh embodiments of the present invention. If another line cable is inserted to add a new multimedia device to the system, a corresponding line connection detecting circuit detects the connection of the line cable to transmit a device connection message to the multimedia controller 1.

-- Referring to FIG. 74, for example, if the multimedia device C is newly connected to the multimedia device B, a line connection detecting circuit 183-12 of the multimedia device C detects that the multimedia device C has been connected to the communication line 112, and the line connection detecting circuit 183-12 transmits a device connection message to the multimedia controller 1. --.

Please amend paragraph beginning on page 115, line 26 and ending on page 116, line 10, as follows:

-- The multimedia controller rewrites a display of the states of the connected devices while referring to the thus-created state-of-connection management table (S185), and sets the value of the counter g Check Time to a preset value (S186). The multimedia controller also transmits the identification names stored in the column "DEVICE NAME" on the state-of-connection management table shown in FIG. 55 to the respective multimedia devices (S187). For example, in the case of FIG. 55, since two digital VTRs are connected and Digital VTR1 and Digital VTR2 are stored in the column "DEVICE NAME", the device ~~names~~ names are transmitted to the respective digital VTRs and displayed on the identification name display parts thereof. --.

Please replace the "Abstract of the Disclosure" beginning on page 139, line 3 and ending on page 139, line 17, with the following Abstract of the Disclosure:

-- A control device for controlling a network device connected to a network. The control device comprises a communication interface adapted to receive description information of the network device from the network device via the network, and a controller adapted to automatically generate an object for the network device using the description information after the description information is received from the network device. The object is adapted to generate a control panel for controlling the network device. --.